

**Notice of Allowability**

Application No.

10/605,607

Examiner

Eric B. Chen

Applicant(s)

HO ET AL.

Art Unit

1765

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/19/05.
2. ☒ The allowed claim(s) is/are 2-9 and 11-18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

NADINE G. NORTON  
SUPERVISORY PATENT EXAMINER

*Nadine Norton*

**DETAILED ACTION*****Allowable Subject Matter***

1. Claims 2-9 and 11-18 are allowed.
2. The following is an examiner's statement of reasons for allowance: the prior art fails to teach or suggest etching through said SOI layer, a buried insulator layer underneath said SOI layer, and a bulk silicon layer beneath said buried insulator layer *using a single etch step*, wherein said single step is sufficient to etch through said bulk silicon layer to a depth corresponding to a *deep trench opening*, wherein said etching is implemented with an *HBr, NF<sub>3</sub> and O<sub>2</sub> etch chemistry*. The closest prior art, Sell, discloses *multiple etching steps* by first etching through said SOI layer (47), and a bulk silicon layer (41) beneath said BOX layer (paragraph 0076; Figure 9) using an HBr, NF<sub>3</sub> and O<sub>2</sub> etch chemistry. Sell further discloses etching through a buried oxide (BOX) layer (46) underneath said SOI layer with an *CHF<sub>3</sub>/O<sub>2</sub> etch chemistry* (paragraph 0076). In addition, Kleinhenz discloses a etching through said SOI layer (120), a buried insulator layer (110) underneath said SOI layer, and a bulk silicon layer (100) beneath said insulator layer a single etch step to a *shallow depth* (column 4, lines 12-23; Figure 4) with a *CF<sub>4</sub>, CHF<sub>4</sub>, and O<sub>2</sub> etch chemistry* (column 4, lines 23-26). However, there is no motivation of suggestion of etching through said SOI layer, a buried insulator layer underneath said SOI layer, and a bulk silicon layer beneath said buried insulator layer using a single etch step, wherein said single step is sufficient to etch through said bulk

Art Unit: 1765

silicon layer to a depth corresponding to a deep trench opening, wherein said etching is implemented with an HBr, NF<sub>3</sub> and O<sub>2</sub> etch chemistry.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

4. In view of Applicants' amendments (Amendments to the Claims, page 2), filed Aug. 19, 2005, the rejection of claims 2-9 and 11-18 under 35 U.S.C. 112, second paragraph, have been withdrawn.

5. In view of Applicants' amendments (Amendments to the Claims, pages 2-3), filed Aug. 19, 2005, the rejection of claims 4 and 13 under 35 U.S.C. 103(a), as being unpatentable over Kleinhenz, in view of Rossnagel, have been withdrawn.

6. In view of Applicants' amendments (Amendments to the Claims, pages 2-3), filed Aug. 19, 2005, the rejection of claims 5 and 14 under 35 U.S.C. 103(a), as being unpatentable over Kleinhenz, in view of Wolf, have been withdrawn.

7. In view of Applicants' amendments (Amendments to the Claims, pages 2-3), filed Aug. 19, 2005, the rejection of claims 6-9 and 15-18 under 35 U.S.C. 103(a), as being unpatentable over Kleinhenz, in view of Wolf, in further view of Sell, have been withdrawn.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Chen whose telephone number is (571) 272-2947. The examiner can normally be reached on Monday through Friday, 8AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBC  
Sept. 12, 2005

NADINE G. NORTON  
SUPERVISORY P

Nadine Norton